used in this study. The specimens of *Thomomys bottae* were trapped in Claremont, California. Thanks are also due to C. Robert Feldmeth for critically reading and evaluating this paper.

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Larvae of *Onthophagus p. polyphemi* Hubbard and *Onthophagus tuberculifrons* Harold (Coleoptera: Scarabaeidae)

Despite the relative abundance of dung beetles of the genus *Onthophagus* Latreille and the ease with which most species can be reared, the larvae of the majority of North American species remain undescribed.

Onthophagus p. polyphemi Hubbard is an obligate commensal of the gopher tortoise, *Gopherus polyphemus* Daudin, and is restricted to the Florida peninsula and the adjacent southeastern coastal plain along with its host. The beetles rarely occur outside of the tortoise burrows, and are best collected by excavation or by scraping the burrow walls 1 or 2 m inside the entrance during the spring (Howden and Cartwright, 1963). *Onthophagus tuberculifrons* Harold is a general dung feeder found over much of the eastern United States. It is especially common in pastures on fresh cow dung, although it has been collected from practically every type of dung as well as from rotten vegetables and carrion (Woodruff, 1973).

The following descriptions employ the terminology of Ritcher (1966).

Onthophagus p. polyphemi Hubbard, third-stage larva (description based on three, third-stage larvae reared from gopher tortoise dung brood cells which were constructed in the laboratory by adults collected by excavation of an old tortoise burrow at Hicoria, Highlands Co., Florida in October 1975; Fig. 1): maximum width of head capsule, 1.66–1.68 mm; maxillary stridulatory area with a row of six to seven conical teeth; gibbosity on dorsum of third abdominal segment with two patches of 45–50 weakly curved setae; venter of last abdominal segment with two subcircular patches of 49–56 caudally directed setae; teeth of epipharyngeal phoba relatively long and coarse; mandibular cusps especially prominent and heavily sclerotized.

Brood cells of *O. p. polyphemi* constructed in the laboratory were cylindrical (approximately 8 by 20 mm) and placed at the ends of tunnels against the glass of

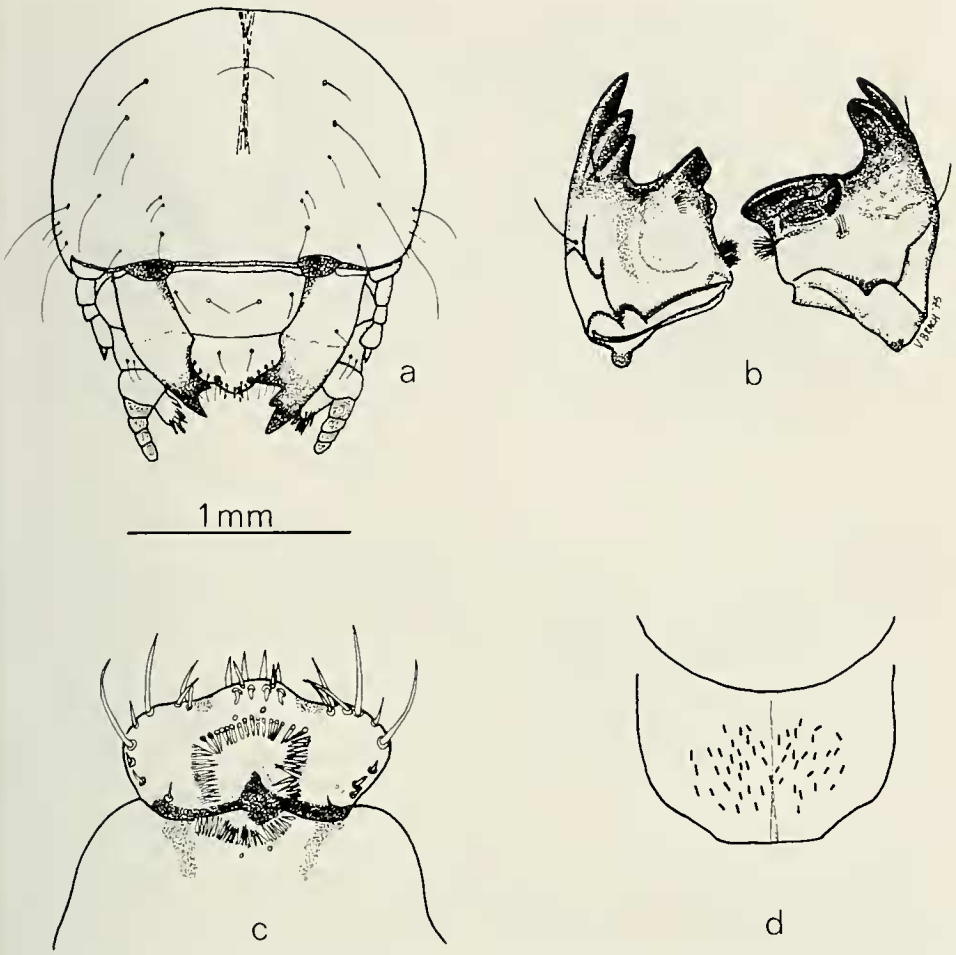

Fig. 1. Third-stage larva of *Onthophagus p. polyphemi* Hubbard: a. Head capsule; b. Mandibles; c. Epipharynx; d. Arrangement of setae on venter of last abdominal segment (diagrammatic).

the rearing jar, 10 cm or more beneath the surface of the soil. Only pasty, finely worked dung was used in the manufacture of the cells.

Onthophagus tuberculifrons Harold, third-stage larva (description based on six third-stage larvae reared from cow dung brood cells constructed by adults collected at the Archbold Biological Station, Highlands Co., Florida in December 1975; Fig. 2): maximum width of head capsule 1.33–1.42 mm; epicranial stem deeply forked basally on frons; maxillary stridulatory area with a row of five to seven short, conical teeth; gibbosity on dorsum of third abdominal segment with two patches of 45–52 weakly curved to straight, finely-pointed setae; venter of last abdominal segment with two sparsely-set, irregular patches of 30 to 39 caudally directed setae; teeth of epipharyngeal phoba small and conical; anterior and lateral borders of epipharyngeal paria weakly, but distinctly marginate; mandibular cusps and scissorial areas only moderately sclerotized.

Brood cells of *O. tuberculifrons* constructed in the laboratory were subspherical

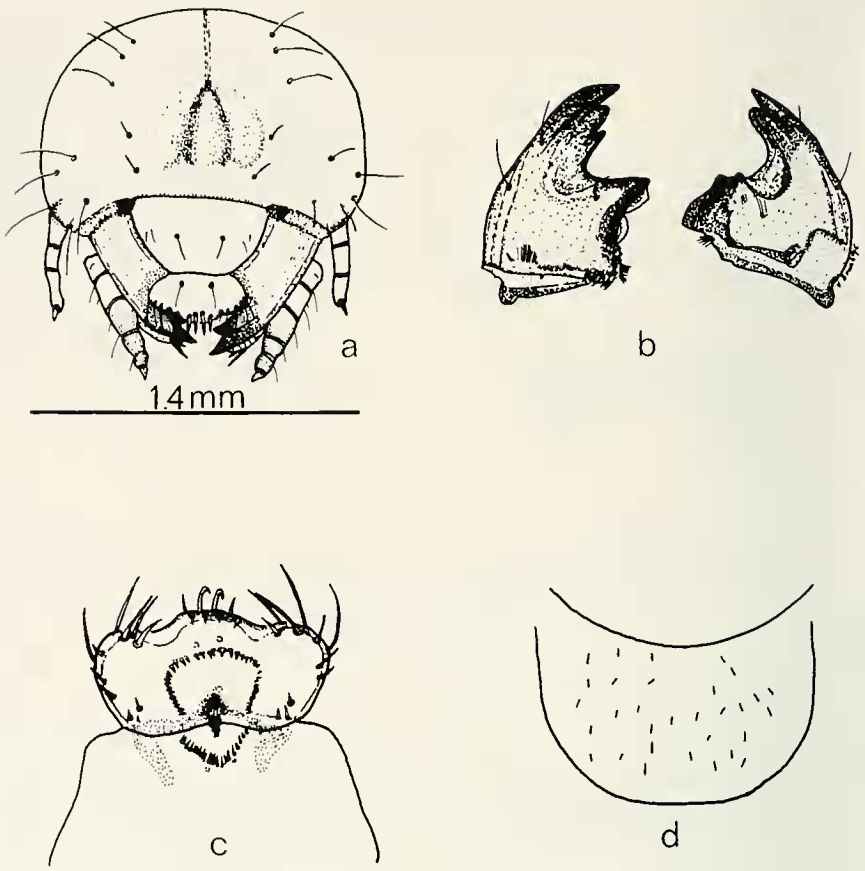

Fig. 2. Third-stage larva of *Onthophagus tuberculifrons* Harold: a. Head capsule; b. Mandibles; c. Epipharyx; d. Arrangement of setae on venter of last abdominal segment (diagrammatic).

(approximately 12 by 13 mm) and made at the ends of tunnels dug 10 cm or more beneath the surface of the soil.

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